FortiAP 112B
QuickStart Guide

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Package Contents

Fortinet's FortiAP wireless thin access points deliver secure, identity-driven WiFi client access that creates a fortified WLAN network that is centrally managed by a FortiGate or FortiWiFi platform. The FortiAP 112B has built-in proprietary PoE to support long-range network installation. It can be setup either as an access point, or in mesh mode.

Your box contains the following:

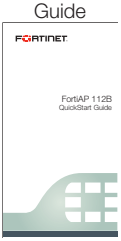
- FortiAP 112B
- QuickStart Guide
- Wall/Pole Mounting Hardware Kit
- PoE Injector with Power Adapter

PoE Injector

Power Adapter

Wall/Pole Mounting Hardware Kit

Quickstart Guide



Connecting Your FortiAP Unit

The FortiAP 112B -PoE can be configured to function as an access point, or to operate in mesh mode.

Adequate grounding must be provided to the FortiAP unit and the PoE injector, in compliance with the local electrical code.

Note: The included PoE injector must be mounted indoors, as it is not weatherproof.

Caution: Only use the provided PoE injector (EPE-1212) and power adapter with this devices. Using a different PoE injector or power adapter may cause damage to the device.

Note: The FortiAP 112B has a directional antenna located on the front of the device. For a reliable wireless connection, the device must be aimed towards its target to establish a connection. See Mounting Your FortiAP Unit on page 7.

To connect the FortiAP unit:

1. Insert an Ethernet cable into the ETH (PoE) port of the FortiAP unit and insert the other end of the cable into the PoE port on the provided PoE injector.
2. Insert one end of the provided power adapter into the PoE injector, and plug the other end into an electrical outlet.

   The Status LED will light up.
3. Insert an Ethernet cable from the LAN port of the provided PoE injector or the ETH port of the FortiAP unit, to a PC, FortiGate, or FortiWifi device.

To configure the management computer:

1. Configure the management computer to be on the same subnet as the internal interface of the FortiAP unit:
   a. Browse to the *Network and Sharing Center* > *Change Adapter Settings* > *Local Area Connection Properties* > *Internet Protocol Version 4 (TCP/IPv4) Properties*.
   b. Change the IP address of the management computer to 192.168.1.1 and the netmask to 255.255.255.0.
2. Connect from the LAN port of the PoE injector, or the ETH port on the FortiAP unit, to the management computer using an Ethernet cable.

Access Point Configuration

The FortiAP unit is designed to require no configuration in most networks. *Zero Configuration* mode works if the unit is directly connected (or through the PoE injector) to the FortiGate or FortiWifi performing the Wireless LAN Controller (WLC) functions, or on the same layer-2 network and subnet as the FortiGate or FortiWifi unit.

If the FortiAP wireless controller's IP address cannot be determined using *Zero Configuration* mode, or if the network uses static IP addresses, it can be configured to use a static IP address.

To enable the FortiAP using Zero Configuration:

1. After connecting the FortiAP unit as described in the previous chapter, the unit goes through its boot procedure and requests an IP address from the DHCP server.
2. If the IP address is retrieved successfully, the FortiAP enters discovery mode to locate a FortiGate or FortiWifi wireless controller. The discovery modes are:
   - Broadcast
   - Multicast
   - DHCP option 138
3. Verify that the FortiAP has successfully connected to the controller.

   In the FortiGate Web-based Manager, go to *WiFi Controller* > *Managed Access Points* > *Managed FortiAP*. A successfully discovered unit displays an orange circle with a question mark.
4. Select the access point and click *Edit*.
5. In the *State* field, select *Authorize*.
6. In the *AP Profile* field, select *Change*, then select a profile from the list and click *OK*.

   The configuration is downloaded from the wireless controller to the FortiAP and the WiFi LED lights up.

To enable the FortiAP with a static IP address:

1. Connect the unit and configure the management computer as described in the "Connecting Your FortiAP Unit" chapter.
2. Telnet to IP address 192.168.1.2.
3. Type `admin` in the *Name* field, leave the *Password* field blank, and press *Enter*.

4. Configure a static IP address for the FortiAP unit and netmask & gateway information for your network, using the following commands:

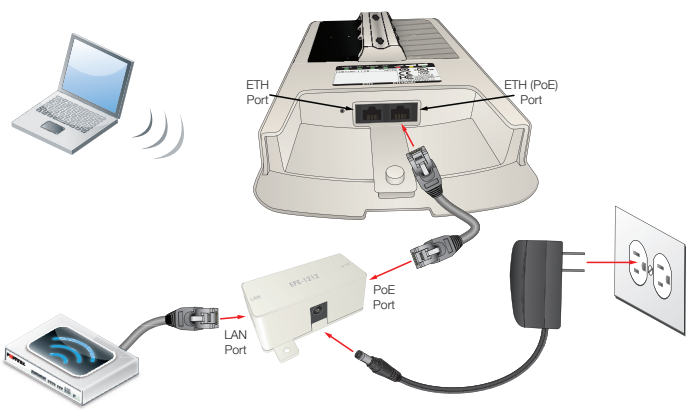
```
cfg -a ADDR_MODE=STATIC
cfg -a AP_IPADDR=xxx.xxx.xxx.xx
cfg -a AP_NETMASK=255.255.255.0
cfg -a IPGW=yyy.yyy.yyy.yyy
cfg -a AC_IPADDR_1=zzz.zzz.zzz.zzz
```

   where xxx is the IP address of the FortiAP unit, yyy is the Gateway IP address and zzz is the IP address of the FortiGate Wireless Controller.

5. Save the configuration by typing the following command:

```
cfg -c
```

6. Unplug the FortiAP unit and plug it back in order for the configuration to take effect.
7. Move the FortiAP to the intended deployment location and connect the Ethernet cable as described in the Connecting chapter.
8. Log in to the FortiGate controller Web-based Manager, and go to *WiFi Controller* > *Managed Access Points* > *Managed FortiAP*. A successfully discovered unit displays an orange circle with a question mark in the *Status* column.
9. Select the access point and click *Edit*.
10. In the *State* field, select *Authorize*.
11. In the *Edit FortiAP* dialog box, select *Enable Wireless Radio*. Leave the remaining settings at their default values. The configuration is downloaded from the FortiGate unit to the FortiAP device.



For more information, see the *Deploying Wireless Networks Guide*, available on Fortinet's technical documentation website, http://docs.fortinet.com.

Mesh Mode Configuration

The Mesh operation mode can be configured using either the Web-based Manager, or the Command Line Interface (CLI).

Before starting, make note of the device's MAC address and serial number, then clearly mark the FortiAP unit to avoid confusion during installation.

Mesh mode requires an upstream FortiAP or FotiWiFi device that has mesh downlink enabled.

Mesh mode can only connect with the Mesh-Backhaul SSID from a device. It cannot connect with the common SSID from a FortiAP, FortiWiFi, or third party device.

Note: Mesh mode can only be used with a controller running FortiOS v5.0 or later.

Using the Web-based Manager:

1. Connect the unit and configure the management computer as described in the "Connecting Your FortiAP Unit" chapter.
2. Start a browser of your choice and browse to http://192.168.1.2.
3. Type `admin` in the *Name* field, leave the *Password* field blank, and select *Login*.
4. Find the *Uplink* section on the *System Information* tab, set the *Operation Mode* to *Mesh*, and setup the *Mesh AP SSID* and *Mesh AP Password*.

   The default SSID and password are `fortinet.mesh.root`.

   It is recommended that you change both the default SSID and password.
5. Optionally, select *Ethernet Bridge* to enable building to building bridging.
6. Select *Apply*.
7. Disconnect the FortiAP device from the management computer.
8. Aim the front of the FortiAP unit towards the upstream mesh node (usually another AP device) to complete the association.

   Once the link is established, the Mesh signal intensity indicators should change from flashing to red, yellow, or green. If red, adjust the location of the unit and the direction it is facing until the intensity indicators show yellow or green.

Using the CLI

1. Connect the unit and configure the management computer as described in the "Connecting Your FortiAP Unit" chapter.

2. Telnet to IP address 192.168.1.2.
3. Type `admin` in the *Name* field, leave the *Password* field blank, and press *Enter*.
4. Enter the following to enable Mesh mode and set the SSID and password:

   ```
   cfg -a MESH_AP_TYPE=1
   cfg -a MESH_AP_SSID=fortinet.mesh.root
   cfg -a MESH_AP_PASSWD=fortinet.mest.root
   ```

   It is recommended that you change both the default SSID and password.
5. Optionally, enable the Ethernet bridge for building to building bridging with the following command:

   ```
   cfg -a MESH_ETH_BRIDGE=1
   ```
6. Check the values using the following command:

   ```
   cfg -s
   ```

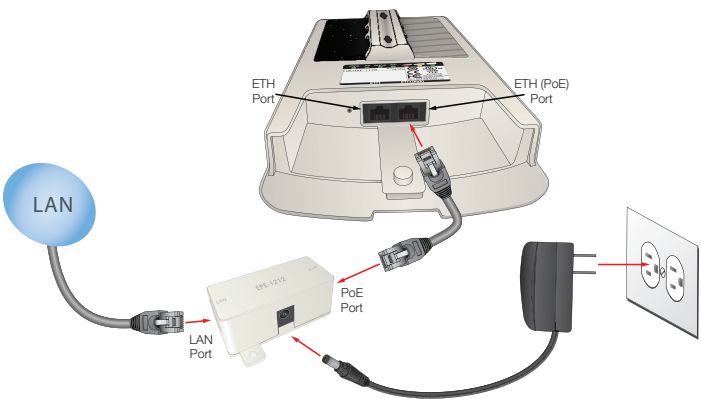
   The output should be similar to the following:

   ```
   MESH_AP_TYPE:=1
   MESH_AP_SSID:=fortinet.mesh.root
   MESH_AP_BSSID:=
   MESH_AP_PASSWD:=*******
   MESH_ETH_BRIDGE:=1
   ```
7. Save the configuration as follows:

   ```
   cfg -c
   ```
8. Disconnect the FortiAP device.
9. Aim the front of the FortiAP unit towards the upstream mesh node (usually another AP device) to complete the association.

   Once the link is established, the Mesh signal intensity indicators should change from flashing to red, yellow, or green. If red, adjust the location of the unit and the direction it is facing until the intensity indicators show yellow or green.

Note: The FortiAP 112B has a directional antenna located on the front of the device. The device must be aimed towards a mesh node to achieve a connection. See Mounting Your FortiAP Unit on page 7.

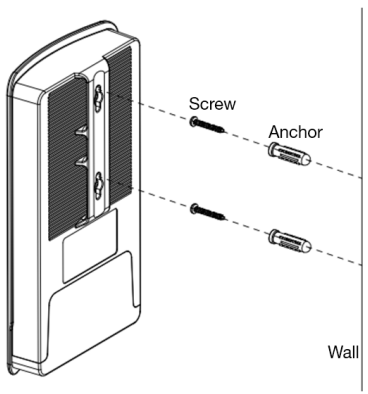


Mounting Your FortiAP Unit

Using the provided hardware, the FortiAP unit can be attached to a wall or pole.

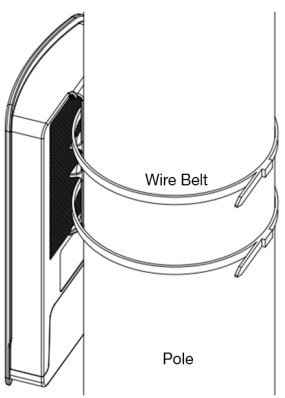
To attach the unit to a wall:

1. Setup the provided anchors and screws in the desired wall.
2. Hang the FortiAP device on the screws.



To attach the unit to a pole:

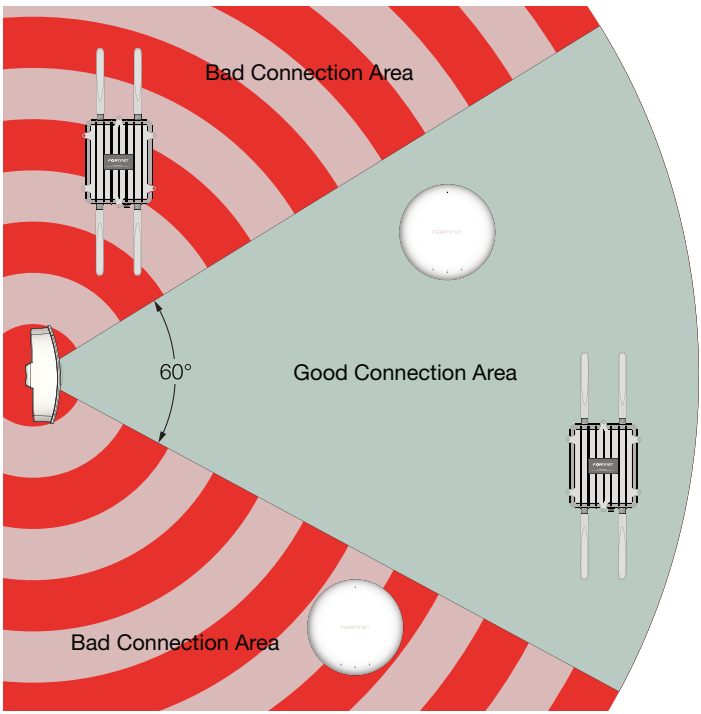
1. Loop the wire belts through the slots on the rear of the device and then around the pole.
2. Tighten the belts to ensure that the device is firmly in place.



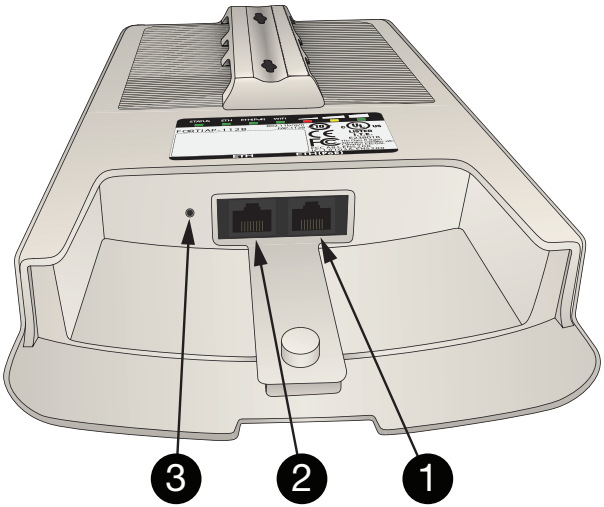
Antenna direction

The FortiAP 112B has a directional antenna located on the front of the device. The strongest signal is achieved in the 60 degree range shown in the below image.

For a reliable wireless connection, the units to which you would like to connect should be within this range.



Technical Specifications

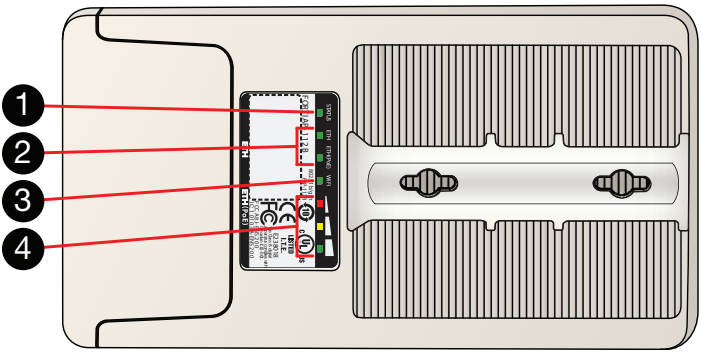


#	Interface	Type	Description
1	ETH (PoE)	RJ-45	Fast Ethernet port with PoE support.
2	ETH	RJ-45	Fast Ethernet port.
3	Reset Button		Hold for 5 seconds to reset the FortiAP unit to its factory defaults.

Hardware Specification	Description
WiFi Radios	Refer to the product datasheet.
Memory	Refer to the product datasheet.
Flash	Refer to the product datasheet.
Power Adapter	Refer to the product datasheet.
Indoor/outdoor Deployment	Indoor / Outdoor.

Note: The maximum distance between the PoE injector and the unit is approximately 30m.

LED Specifications



#	LED	State	Description
1	STATUS	Off	No power or the system is booting.
		Flashing Green	The unit is searching for a controller.
		Green	The unit has successfully connected to the controller.
2	ETH and ETH (PoE)	Off	No Ethernet link detected.
		Green	100/10 Mbps Ethernet link detected, but no activity.
		Flashing Green	100/10 Mbps Ethernet link activity.
3	WiFi	Off	Wireless link administratively disabled/off.
		Green	Wireless interface is functioning correctly, but no activity.
		Flashing Green	Transmitting and receiving.
4	Mesh Signal Intensity Indicators	Off	Mesh mode not enabled.
		Cycling	Searching for upstream mesh node.
		All Flashing	Mesh network error.
		Green	Link quality is good.
		Yellow	Link quality is average.
		Red	Link quality is poor.

Documentation and Links

The following Fortinet web pages provide information and resources for your Fortinet product:

1. **Customer Service & Support:** https://support.fortinet.com
   On this page you can create a support account with Fortinet, register and manage your products, download updates, firmware images and release notes, and create technical support tickets.
2. **Technical Documentation:** http://docs.fortinet.com
   This page provides the most up-to-date versions of Fortinet publications for the entire family of Fortinet products. The following guides provide more information on the installation and configuration of your FortiAP unit:
   - Deploying Wireless Networks: This guide describes how to configure wireless networks with FortiWiFi, FortiGate, and FortiAP units.
   - Wireless Starter Kit: This guide provides example configurations of FortiAP thin wireless access points.
   - PoE Injector QuickStart Guide: This guide describes the Fortinet Gigabit PoE Injector and provides basic installation instructions.
3. **Knowledge Base:** http://kb.fortinet.com
   This page provides Fortinet technical documentation, such as troubleshooting, how-to articles, example configurations , FAQs, technical notes, and more.
4. **Technical Discussion Forums:** https://support.fortinet.com/forum
   This page allows you to communicate with other customers and Fortinet partners about Fortinet products, services, and configuration issues in a forum environment.
5. **Training Services:** http://training.fortinet.com
   This page provides course descriptions, availability, schedules, and locations of training programs in your area.
6. **FortiGuard Threat Research and Response:** http://www.fortiguard.com
   This page provides up-to-date information on vulnerabilities and threats, and includes a virus scanner, Internet Protocol (IP) signature look-up, web filtering tools, and related information.

Tools and Documentation CD

The tools and documents on this CD are current as of shipping time.

Comments on Technical Documentation

Please send comments or information about any errors or omissions in this or any Fortinet technical documents to techdoc@fortinet.com.

Cautions and Warnings

Please review the following cautions and warnings.

Environmental specifications

Operating temperature: Refer to the product datasheet

If you install your Fortinet product in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, make sure to install the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature.

Storage temperature: Refer to the product datasheet

Humidity: Refer to the product datasheet

Air flow - For rack installation, make sure that the amount of air flow required for safe operation of the equipment is not compromised.

For free-standing installation, make sure that the appliance has at least 1.5 in. (3.75 cm) of clearance on each side to allow for adequate air flow and cooling.

FCC Compliance

The Fortinet product has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

For operation within 5.15 ~ 5.25GHz frequency range, this device is restricted to indoor environments.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE: Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for uncontrolled environments. This equipment should be installed and operated with a minimum distance of 21cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. The availability of some specific channels and/or operational frequency bands are country dependent and are firmware programmed at the factory to match the intended destination. The firmware setting is not accessible by the end user.

Industry Canada Statement

This device complies with RSS-210 of the Industry Canada Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Règlement d'Industry Canada

Ce dispositif est conforme à la norme CNR-210 d'Industrie Canada applicable aux appareils radio exempts de licence. Son fonctionnement est sujet aux deux conditions suivantes: (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

Caution: The device for the band 5150-5250 MHz is only for indoor usage to reduce potential for harmful interference to co-channel mobile satellite systems. High-power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.

Avertissement: Les dispositifs fonctionnant dans la bande 5 150-5 250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux. De plus, les utilisateurs devraient aussi être avisés que les utilisateurs de radars de haute puissance sont désignés utilisateurs principaux (c.-à-d., qu'ils ont la priorité) pour les bandes 5 250-5 350 MHz et 5 650-5 850 MHz et que ces radars pourraient causer du brouillage et/ou des dommages aux dispositifs LAN-EL.

Radiation Exposure Statement:

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 21cm between the radiator & your body.

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 21 cm de distance entre la source de rayonnement et votre corps.

Grounding

Ensure your Fortinet product is connected and properly grounded to a lightning and surge protector. WAN or LAN connections that enter the premises from outside the building should be connected to an Ethernet CAT5 (10/100 Mb/s) surge protector.

Shielded Twisted Pair (STP) Ethernet cables should be used whenever possible rather than Unshielded Twisted Pair (UTP).

Do not connect or disconnect cables during lightning activity to avoid damage to your Fortinet product or personal injury.

Electrostatic discharge (ESD) can damage Fortinet equipment. Only perform the procedures described in this document from an ESD workstation. If no such station is available, you can provide some ESD protection by wearing an anti-static wrist strap and attaching it to an available ESD connector or other bare metal object.

Caution: This equipment is to be connected only to PoE networks without routing to the outside plant.

Caution: Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to your local regulations.

Register Your Product

If you did not register your Fortinet product, please register your product now.

Register

Register your Fortinet product in order to receive:

• Technical Support • New product features • Protection from new threats

Enregistrer

Vous devez enregistrer le produit pour recevoir:

• Support technique • Nouvelles fonctionnalitées du produit • Protection contre de nouvelles menaces

Registra

La reistrazione ti permette di usufruire di:

• Supporto Tecnico • Nuove funzionalita • Proteezione dalle ultime minaccce

Registrar

Debe registrar el producto para recibir:

• Apoyo técnico • Nuevas funcionalidades del producto • Protección contra ataques

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Product License Agreement

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b) Use a suitable shared library mechanism for linking with the Library. A suitable mechanism is one that (1) uses at run time a copy of the library already present on the user's computer system, rather than copying library functions into the executable, and (2) will operate properly with a modified version of the library, if the user installs one, as long as the modified version is interface-compatible with the version that the work was made with.

c) Accompany the work with a written offer, valid for at least three years, to give the same user the materials specified in Subsection 6a, above, for a charge no more than the cost of performing this distribution.

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